Rec'd April 19

Kew
March 27/67

Dear Dr. Sintenis

I am ashamed of the length of time that my friend letter this time last year has lain in my portfolio of unanswered letters — but in my defence I have had to use of unusually heavy work, & among my garden & horticultural work have been attended to before replying — I hope the influence which of your humble faculties may

Dear Asa:

Newport 5/7/57

he is time for you, — this also
labelled J. Muenzii in the
same paper, Rubus dis with
Kuntze & Thurber

I have modelled through
Cuttle for Geo. Vasey. Striking
One is quite rude — I was
rather afraid of the characters
of the Lady, Otherwise one such
great usefulness. Between such
Clerk-school forms. I have
spirit kept up

Melvaceae
Sterculiaceae.
Velezy Phoca Pedicelaris bas —
Luchlenbergia Do —
Linum cultus
Du cultus Do

Cereus
Nyctiralus
Phyllocactus & Epiphyllum
Rhipsalis
Opuntia
Opuntia
perseus

Why is Rhipsalis classed as having pinnate leaf, & why the is usually dimorphic.

Do you still collect facts, if so the collection of plants in seeds would be most acceptable .. in indeed would any seeds of the rarer succulent plants be. if sent post. prepaid the same of you can.

Relax Hedgehogs from plants & shrubs, are we fish that come to my net.

Thanks for your correction of Candle - I had only one later capsule, & unfortunately

must have turned the upside-
down!

I hope that you have received
this last year (1866) Gardner Report.

I fear that the year 1865
(Barnett's business) was omitted
to be sent for the Gov. Office, — you
have been in the Office with for
perhaps, but the Board of Works
also issue them, I suspect omitted
it last year & sent me a few
months ago. as Gardner heard.

In haste truly yours

Rec'd Nov 19th Postmark Nov 5th

Ans Dec 15 Kew Nov 24/72

Hooker J. D.

My dear Dr Engelmann

You must have long in this point me also an unsatisfactory correspondent; & I truth I am ashamed to think how long it has been to write to you. I wonder hardly venture to do so, did I not know that I provide of patience & long suffering, good Botanical correspondent also "not as other men".

Your two letters of March 11 & May 3rd /71 came safe to hand as did the valuable box - with the grass for Baker. The Cacti came also

in first rate condition -
& the valuable Pine cones -
P. Ellettii is quite new to
us - I should much like
to have seeds of it.
Pinus Lambertiana is also
growing with us, & Araucaria
Cunninghamii too was sent
off at once.
Cones of Araucaria is also
claim from you.
Say in that I have a
pretty good account to give
of what you have sent us -
Our fault I have to give with
you is, that you are nothing
in return! - Had you done so

I should not have so long delayed answering your letters — as it is write you now tell an what I can do for you.

I have just had our Carters-Town Jamaica and separate, & the collections are managed — they are still in high health & vigor — how I should like to show them to you. Baker continues his studies of Agaves & Yuccas, the cultivation of which Miss Saunders has taken up with his wonted skill enthusiasm & judgement.

My Botanical Memoir is nearly ready, after 7 years incubation, & the Genera of Cactaceae is coming out — with the Rubiaceae by myself & the Compositae by

Bentham – both tremendous
jobs – After their orders I hope that
we may get a more rational, but
my dear Asa Gray, I'd rather do my
own & Bentham's years, & that
work has not even paid the
cost of printing! We printed it
ourselves, that's it – might be
sold at the cheapest possible
rate – Bentham liberally
guaranteed the cost of production.

I shall be very anxious for a
letter from you to say that I
am forgiven & to ask for
some seeds or plants for
Kew.

Ever dear Dr Engelmann
Yours very truly
[signature]

I enclose with humiliation, a note
from Baker that I had mislaid with
arrears of my own correspondence.

Ans Feb 14th
to Hooker (Copy)

Jany 15th 1873

Dear Gray

I am deep in Pinus and prone to consider P. edulis, Fremontiana, Llaveana, cembroides, Nutt. (an Zucc.?) or Parryana, Engelm. as either one species or, if 2 or more, as inextricably confounded.

Can any American botanist unravel the coil?

The buds are identical and very unlike those of any other pine known to me.

What is P. Chihuahuana, Engelm.? Torrey is certainly wrong, mixing up P. tuberculata, too, with insignis. Is not the Chihuahuana our older

tuberculata?

Pannij's P. Zonneyana is said to be Crotonia lophocarpum – an earlier name.

× × ×

J. D. Hooker

Rec'd March 30th
Ans April 9th

Kew Herbt 14/93

Agave Utahensis
Kew

My dear Dr Engelmann

I am indeed obliged to you for your valuable letter on the Yucca, which clears off a cloud of difficulties. I keep you over many a slight. I am especially glad of the notes on the Nat Pines, which I suspected might be forms of one.

I have put the information in your letter into form as far as I understand, kindly revise it & then let that) clearly understand it of you. There is a confusion about N. flaccida, which I have clear off. We had, want-

Dear Sir

P. Torrey

Chihuahuensis & Californicus

It would be an immense boon to European Botanists if you would send you the new Dl Poor. & send me notes on the other American species of Pinus & indeed of the Conifers. - Posterity will curse Clear ch the men - Men only who have grown with the growth of these departments of Botany can master them.

The named case of pines

Museum see, thanks to you, -
admirably named: but they
do not help us to name
the Garden specimens &
the newer species.
Do pray also help us i respect
of Dendrolon Oaks.
I have hoped on your thanks
for the Refugium to Baker &
Wilson Saunders -
I have got a little
collection of Ferns for your friend
which shall go at once ..?
cannot succeed to the name,
but they are as good as
Baker can make them
I shall address them to you.
for the Start.
Begging thanks for procuring
me seeds of P. cerbatis & Sp.

P. Schiedtii, the genus is nattatio
tender with us, but it has
stood out for 10 years & more.
Our Pinetum is now a splendid
collection. No end of conifers
even conif. Cones; no cones
either!.

The box of Yucca seeds & species,
was most acceptable, the letter
for the Museum. You account
of the Mexican pertelgatos is quite
curious. Can you send me
specimen for N. Museum?

I think I am a most
unmeriteable beggar.

Or no more at present

Yr you most truly

[illegible]

Recd Febr 25
Ans March 11

Feb 4/74.

My dear Sargent.

My many thanks for the interesting photographs of the species & the valuable fruits for Kew Museum: also for your excellent paper which has troubled me to get over your queer letter.

I have had fragments taken of all the specimens you distribute. In fact as we have them ourselves,

I hope that Oliver has put them into Perspex - i.e. clear as illustration samples as possible.

Now I may ask for further advances, information, descriptions or drawings if any in the that we can provide shall be at your disposal that of sending types which is against Govt. rules.

We are delighted to

Mean that you have
taken up Mr Green. &

I hope that you will follow
it with Mr Griffin.

With united regards

Most sincerely yours

M J Berkeley

Rec Dec 16
Ans Jan 20

New York Nov 29/74

Dear Dr Engelmann

I am exceedingly obliged to you for the Abies Cephalonica seeds which have arrived in capital order & which I do not doubt germinate well. Also for the Juniperus occidentalis & Pyrus angustifolia. How I wish that

will see the Conifers
of Colorado - you say there
are 10 Abietineae & 3
Juniper. When you
write again please
remember there - I
want much to
print a catalogue of
Neo Mexicans but an
Etch adiffs should
form sequences.
We are getting a nice
collection of grasses
Thanks much to-

yours truly -

Ostwald

W. O. Stoker -

X

Aug 19/76

Dear Dr Engelmann

I have received long unanswered letters of yours by me - full of valuable information on the yucca's etc. I thank you much for them & apologize for my long delay in answering them. During the last year the demands of the Royal Forest, of Government departments, & of Kew, together with household cases devolving on the loss of my wife; have

overwhelmed me &

my communication with

friends overboard. Now I am

in the eve of permanent &

am clearing off old scores

as fast as I can

Your papers on algaes

came to hand & I thank you

much for them. & for the

remarkable photographs.

We have no chemism of

the Aloes fragrans in

Fontainei is dead & this

plant is the same as

Rozanne to make any thing

Y. Maximowicz could not
write and suddenly gave
Thanks many for the
Scotes melanospora, it is a
very interesting discovery.
You prepare a Fungus
also to hand to a much
important one, in
nature of the has appeared
in "Nature".
I shall soon send you
list of our species — we
are now getting the sheets
together. Progress mean
at present for you in drying
Yrs J D Hooker.

Rec Nov 19th
Ans Dec 14.

Rev. 2/77.

Dear Dr Engelmann

Many thanks for your kind letter & the most acceptable specimen which shall be given immediately. We have date a very fine collection of American Cactus plants & my father — sure & then through the woods — second a second plantation myself & the explanation below, which through your being so strong very well marked.

I heard it was from mr want of milk in stay that I left America & this without

visiting the Eastern States! but the fact is that my time was more than I had anticipated. Business at home where I left the new House heating apparatus & the new Herbarium both urgently wanted, & the Royal Society. And indeed since my return these and a repetition of the engagements I being in my friends in order to get through the arrears of correspondence & official work.

I expect you I venture hopeful my having had to remain as my arrival prevented would give half my fare for

another trip will take us into the forest.

Well, Sprague & I did give ourselves up in despair of the Sierra - Stanislaus the Walker trees in California & Utah. We have got a vast deal of information from Bellanda, Kelley, Muir, Bonner, Brandegee & others - & with much the same result.

Pinus affords little scope for doubt. Except the case of Jeffreyi & Coulteri, which puzzle us terribly. Both are here all - then & there & the characters of cones of the extreme Sierra forms in California: viz. Jeffreyi cone smaller, more numerous, more uniformly clustered. Coulteri much larger, more wood, more solidity & projects outwards rather than backwards. As to leaf & habit we could make nothing

of Eddies; & it would be impossible
that there are also intermediate
sizes of eddies — Jeffrey asks me
gives the hypothesis, & I am inclining
to it i the Rocky Mts
of Kalfornia for Shasta) can
hardly be doubting. I think the foreign
sediments i lime, perhaps of
foraminifera & the bed of some
other planet: P. mentate of which
it may be the lava with the
basalt-pebbles scattered off, does
not occur on Shasta. — but does
occur at Klamath River.

Gen. P. McClellan (photos of
most) (Countrymen of our readers
but probably not the new American planet)
is i my remarkable — planets,
obtaining i Stephenson esp., &
2. extraordinary hardness of wood
2. which gets sand-blasted — in
curious manner (as does the
wood of Juniperus Californica).

Abies Mengesii is unknown & variable in the Rocky Mts. over wd seem to inhabit the part of California we visited! but I have a case from the extreme of the State & N. Sea. I am puzzled about Cupressus; they do, I think it will prove to be traceable into a Monterey form of Mengesii. Have you no intermediates? Pines are the standing puzzle! for the life of us we could see this minute more than two in California & nil elsewhere. The Arcadia (Cupressus) is much better grounded, but the seeds of the cone are much rounded, known with Behrensii (seeds) & Chamaecyparis. That it was a species intermediate between them.

The variations (variations) of the gray plant of C. grandis are worthless, x

been in only cultivation of such fruit; but have never found any varieties in the old towns. Its conspicuous yet uniform character but variable in size, thirsty nature seems to keep us thinking nobilis or amabilis.

P. Amabilis is much less variable in a young state than grandis, but equally stable when adult. The leaves vary in good deal in size & the length of the fruit-pedicel (nobilis) are intermediate between grandis & nobilis. Specimens I saw there in small herbarium of Lambert's figure 4 nobilis or in fruitless specimens that we have here. The California authorities are agreed in there being but three species, two Pacific & Sierra Nevada, & this seems to be the case.

to the back variations.

The pecan grandis I do not know but in the garden I have with very deep green divaricate leaves, deeply notched at the tip - which is not unlike what Bolander sent to A. Gray from Sierra Nevada as true grandis -

I have not looked at the nerve structure & towards the leaves but hope that Mr. Neal will - I suppose to serve him numbered leaves without name or notes - & see what comes of them!

We have a fine set of the American carpines & Ostrichs - some of the varieties best for you & there are Alaniex - ; perhaps 4-5 - or more such in the new Pinetum which is systematically managed throughout - Monticola comes

abundantly within, also tuberculate.
Will not Lumbarti at all, nor
Sebinians, many cases have
one lime, Muriate cases with
and magnesia which gets killed
by the first. Sulphur sweet by steam.
& Tubules grow rapidly slowly.
Pine Grandis grows rapidly.
Rubilis has undergone wide. – balsamic
does abominably – Some form of rubilis
or magnesia cell thinking gently.
Why when convenient send me
an Pallidus) Pine seeds & acorns &c
Mitchgrove
Tell me what I can do for
you or your son – with kind
regards & hope to see you
Yours
Pat Stokes
I am very glad if seeing them
supplement to the baker

Rec March 19th
Ans. 21st

THE ROYAL SOCIETY,
BURLINGTON HOUSE, LONDON, W.

Rec March 4 78

My dear Engelmann

I have received your capital paper on Juniper, Cupressus Thurifera, & to day of Armenian Fir - which have the interest on Excursing, & I thank you very much for them & for already enlightening contributing.

The Juniper of stupendous age which I spoke of in the Sierra Nevada are, what you call occidentalis, & which is so unlike J. O. of Colorado, that I could not imagine it to be in the same species. In Colorado I saw 2 Juniper

1. f. ~~occidentalis~~ Virginiana (Pitcher & Brandegee) quite like the Eastern plant in habit, but far more glaucous. It has hitherto been called here, on account of its whiteness.

2. f. occidentalis, (Pitcher & Brandegee) a low tree, always trailing on the ground, the branches undeniably flattened, & outstanding Excentric, with hardly any bark towards the apex of the plants.

In California I have recognized but one tree juniper, down in the Sierra Nevada, & was struck & excited, but my buggy with an Common Cornice Crumb-amazing amazing to say. — This tree did not differ from the eastern into my mind, but was exactly like Virginiana but incomparably stouter.

I have a large branch of the
Pinus ponderosa of Lake Tahoe, &
will send you a bit if you
can be sure it. It was equally
abundant on the Colorado & the
Eastern states Virginiana. It was
this I afforested to be California,
wrongly no doubt.

It grew at a rapid pace after
the Rody but accidentally,
on rocks, & presented a most
remarkable appearance.

I have a branch of it from
the "summit range" deeply grooved
by the snow blast. I send a
wood-cut of this.

As to the Abies, alias Picea,
grown over them. Gray has I think
told you that we have long
bracted cones of magnificia from
~~Kings River~~ Kings river
~~Tulare Lake~~ in S. California, & think

Visited also the California Observatory in
Mt. Wilson & in San Francisco ~~[illegible]~~ were a great ... Visited the
length of tracks formed no characteristic
whatever. - After an inspection of
innumerable ~~[illegible]~~ tracks & many cases, I cannot
doubt nubilis & magnifici
by our species.
As to condor, subdolpinie & grandis,
I am not competent to decide without
a longer visit to the R. Mts. I saw
condor at two elevations, foot
of White Peak (a detached pinnacle) & Gray brought me
what he called condor on
La Veta pass @ 10000 ft. - I also
saw a vulture at 10000 ft at
Gray's Peak, which I supposed to
be the La Veta one. I have a great
mind to send you all my
specimens of Picus (albolarvatus) shot
?? - you can return them at

THE ROYAL SOCIETY,

BURLINGTON HOUSE, LONDON, W.

Leisure. I wish I could say they
have the weather clearer yet.
Many thanks for the reference to
of P. hendersoni (from Colorado?) & they
agree with what I saw in Colorado,
but in Sierra Nevada I have
a special passage from some
of middle hendersoni seen, who to
cover abundant big as from here!
The Colorado hendersoni is a much
stronger tree, with shorter greener &
leaves. I should say than any
California one.
Mr Sargent has sent lots of
specimens of menziesii & douglasii;
cones ripe & I am not much
the wiser. When I bring the
Garden specimens of abies over Europe
I cannot help allow a week
or ten days for nature approval,
& should be delighted to render

Phenzinii & Euphrosinia roses.
Or the silver Rocky Phenzinii
Pods does not hold, inham
stuff silvery-leaved & soft green
leaved states? Not of Trans. —
Douglasii is just the variable
the Pacific Coast line (N. California) near the sea
of Menziesii is true — but of
the Euphrosinia cove, which is ~~Pacific Coast~~ shade
~~Sun~~ with narrow scales.
You are quite right! P. Ralphowiana
is nothing but arizonica with the
needles lengthened & contorted.
Yes I ~~know~~ agree with you ~~entirely~~ quite
about alba caulis & flexilis — ~~both~~
~~other~~ both allied to Cembras. I am
delighted with a splendid
photograph of alba caulis just
received from Watkins.
You mention the wood of
~~Gymnotis~~ nobilis & mexicana as
good, we were always told that

They were worthless & it was much wonderful to see them rapidly growing & disappeared after growing in the forests. In 2 years they were as old as you. - They are shaped like this tool, pressed on by White Polypore Fungus (to which I gave Dr. Hartnett attention) & which renders the Mycelium all through the living wood. & hastens decay. Now we were told that there was no material difference between the value of the wood of grandis & nobilis (alias magnifica) - grandis of Shasta has dark bark when cut into, & nobilis of Shasta (essential bark) red when cut into & is very much harder

Mr Nabi's address is Science Schools - Dublin.

We have a miserable Scrap of Abies grandis Lowiana, of about Dozen a Scrapule - & no

Ab. pezoenis i Mex. both I with day a bit of Dr Carsen (so called I hope rightly) plants for you.

Photographs of Prof. I am trying for my fellows at the Photographers.

Give my dear Engelmann with best regards to you dear

Ever yours

J. D. Hooker

Rec Dec 20
Ans Jan 15

Wood Station
Jefferson Co
Missouri

Dec 2/74

Dear Dr Engelmann

I have been very long in answering your letter, but in the first place I cannot force any species of P. Jeffreyi on Henderson with young cones though I fancy there must be some somewhere. I in the second place I have been quite overwhelmed with work of all kinds & have little time to look at other Botany than my pressing demands. I have still Arceuthobium on a balsam & Lacerin M. Jeffreyi & Henderson cones

Carefully & refer to de Candolle
Dear. Other but Menziesiana
character for there is the
blue foliage of Pappesii. which
Gray & I could not make
any thing of in California.
The Cones you kindly sent me
of Pendulina are I suppose the
Colorado plant - which appears
to me to be a different form from
the Californian & typical of a
drier climate - always
dry Rocky Mtn Climate
& small cone.
I have found a man here
in Lancaster who really appears
to study pines well, but to the
well

resin canals of the leaves. His name is Sym & he is a freeman to the man at Elvaston but worthy of a better place. He has been correspondg with me about Abies Menziesii of which he points out that the Colorado form differs from the more Western in the more lax flattened leaf which is more like that of nobilis & Alba. In the course of cultivating specimens for him I came across your observations in the Rev Hooker which are of the greatest value. You seem to think that some of the Rocky Mt Abies of Engle & my Lab Engelmannii. I have not looked yet at the cones: the Museum (the Mab.ns) specimens have no cones & did you judge by cones or by foliage? The two may be distinct

& certainly after carefully noting & agree
observing I can discover no appreciable
difference
difference or Brandegee or to the
distinctness of Engelmann's Shrub
in the apparent equal plant;
but when I see the perpetual
variations of our common
species I grieve.

I have as much difficulty as
Every with the relative amelioris
of N. Mex. Lots. I like your arrangement
of them very much & do not
doubt but that it represents
things — but I really should
like to know more of the
reasons of the species before
making up my mind. A. concolor
seems very distinct, but I am
puzzled about S. balsamifera. It
would be most interesting that
a man like Brandegee who knows
the Colorado forms should visit

2

Date Dec 2? 1878

The forests of Wyoming I delay to distribute until the Mountain of Denver - The great forests of the Rocky Mts which occurs upon a range is probably accompanied with changes of vegetation.

I hope very much that the figure with work of these Notes from a horticultural point of view & later into fuller consideration as these volumes have written & the Alabama Observer too - I have offered in my little aid that I can give - Gordon's book is worthless I think in botanical horticultural & botanical point of view.

I was so cudgelling your & gets your arrangement of Juniperus, though hurried till now regarding the one I suppose to be the Californica & occidentalis

I suppose other weeds along your
roots must have seen
it & I have written to
him about it.
If as I hope, Syme sets you on, I shall
venture to trouble you with many
an inquiry & endeavor
Enquiry & endeavor is time to
Vesta you also to ascertain how it
about: if it would not bore
you. I must set to work
now at once at "Genera Plantarum"
& 'Flora Indica'.
Gray tells me that you have
been poorly. I am exceedingly sorry
to hear it. I still hold back with
intense
intense pleasure to our divine
in the forests, & should be much
when to repeat it... I wonder if
when I go again to America I can
shall get you to go with us & the
Conference forests? Mistress & two
children with us! I am with kind
regards to Mrs Lindsay & yourself
sincerely W Hooker.

Cactus Skeletons

Rec'd Oct 30

Dec 15/78

My dear Engelmann

I find an unanswered old date letter of yours to Dyer (which I have taken care I would answer) offering us for our Museum specimens of showing distribution of prickles Cacti — there would be numerous & interesting to us. & meanwhile if you can collect & preserve them please do so "in Sweetmeats".

After I wrote to you the other day, I found at Kew a fine covering specimen of what we call Cereus Peruvianus in England — always in the form in vernacular & foliage with bluish tint of foliage other P. pendulus. The cone is down 6 inches long.

I have asked Mr Gardener to write out for you (over flirtation a ladder)

I have been arranging all the Conifers of our Herb.; intercalating the last few years' collections, & bringing the rest into some order preparatory to the work of the Gen. Plants; when I hope to work into the species. Meanwhile I shall keep your precious remarks.

Did I tell you that Mr Syme & I have been endeavoring to distinguish the R. Mt. A. Menziesii, (the literally flattened leaves of which you have observed) — & to follow you in keeping it distinct; but we find it quite unhelpful — the characters shaden off, & there are so many other forms of Menziesii pinta

in detail. I think that when really definite & enduring characters cannot be found, the best way is to make designated varieties with descriptive names. Pacifica if you like of the R. M. Mexicana.

Spring Cons. Engelmanni come always recognizable: it has always the naturally flattened leaves.

No doubt you are right about Ab. Sonnenscheinia, & that it approaches Valacornica more than the western ones. As to arnebaldi, grandis &, I am old at sea about them. I recognize with you the coast form of the true grandis. But it seems a nasty place to pass: perhaps arnebaldi i.e. your Shasta & the California conciolus that looked like Gray & I found nestling at the base of the Sierras & on the California conciolus on the Shasta Sierras & recognized that we regarded also as forming one. or Brewer. Meanwhile I should be very

that he thought the littoral plant a var. of U. Sierra one – but do not ~~quote~~ cite this critical conformation. Matter the littoral form to have dark green leaves rather short & very spreading.

These rambling notes are not of much use – & wouldn't do for quotation.

If I could get some one with time to overtake the leaves & specially over the Museum specimen of cones, I could better judge (i.e. what we call this is numerically) but young cones are beautifully glaucous. I saw no young plants at all like those in California.

If I should be very glad of good Rocky hill specimen of both conicola & californica as I may have confounded them.

You say P. aristata should bear the name of Balfouriana – but I think this is carrying the priority claim too far. No one could make out P. aristata of Murray's description figure or specimen. – True enough, often aristata was variously described, you can identify Balfouriana by comparing specimens & they only rather if you make sufficient allowance for misapprehensions of observers & description.

Hon March 18th
Ans ——— 19th

Newl 5/79.

Dear Dr Engelmann

I am truly distressed to hear of your sad bereavement, & beg to offer to yourself & your son my most sincere sympathy. I know what I felt myself under similar ~~circumstances~~ distressing circumstances, & can only hope that time & circumstances will bring relief to your mind & happiness to your home. I rejoice to hear through our friend Dr Watson your son is convalescent after his fearful illness & may he long continue to be a comfort

Dear Sir —

I have had another time at the Pines, endeavoring to come to an independent conclusion — without reference to your paper. — in fact with the Garden, the Herbarium & the Gardeners types (based as his determinations ~~as they~~ are the types of them are in useful) & the Synopsis of Vivaria, a very acute man who has the highest opinion of your work. We come to precisely same conclusion, except as to Concolor being a Sierra plant, we cannot trace Sierra

The Cypress with any California grounds specimen, either in the Nursery or in nursery
descriptions. — I have been
unwilling to break off the twigs,
owing to the serious illness
of the Curator of the Garden, who
is in almost a hopeless state,
which throws an enormous
amount of labour on my hands.
I must take you however for
few notes he wished that I
should communicate to you.

1. Mention of the strange shoots &
branchlets of albo Mist on Glebum,
the weather Even on old trees
are prominent.

2 There are Stomata on both sides
of the Pacifica Menziesii, as on
the Ital.n leaves of Sitchensis.

3 The calyx-lobes of the Colorado *Menziesii* (~~[illegible]~~), usually 7.:— of the Pacifica 4–6, usually 5. — The above from counting whole clusters of 1000, of seedlings

Mr Sprague is delighted to go along with you in separating the R. M. from the Pacifica *Menziesii*.

This is a very fragmentary sketch. You must be content with —

Believe me
Ever sincerely
J. D. Hooker

P.S. I do hope you will gratify us by an occasional letter. Mr Sprague & Mr Sprague speak with regard to the pungency of *R. Fragrans*. I always upheld it, but Gray laughed it to scorn & truly enough I was

Truly

Dec Mark 18th 1879

Lovely pinks to the fine specimens specimens in Colorado such as we have in England: but all each I did to the Museum from the Grays & my own satisfaction.

I shall send you notes to the Gardeners Chronicle, they will be most useful

Do you know Pinus Monophylla? We have 2 plants so called, both from Edinburgh, presumably from Jeffrey seeds. One is very like Contorta but with very different bark. The other ~~[illegible]~~ like monticola, but a wonderfully robust creature with very thick shoots.

[illegible]

I have 2 Oak sp. 1 from Mt Diablo [illegible] Hot Springs, [illegible] the Coast [illegible] Oak [illegible]

Rec April 28th
Ans May 2d

Rec April 14/75 79

My dear Dr Engelmann

I perused the questions in your letter to Mr Sprague, which refers to his boundary of the American Pines & a very earnest request to Dr & as I think you will be interested in his remarks I send a copy of his whole letter.

I have, with Gray officially & referring to repeated ~~[illegible]~~ requests concerning ~~[illegible]~~ of Mr Rhoads should be formed on the Survey. The only two species we found there were Mesquites & Lonicera, both had very dwarfs brown bark. – We could not have overlooked a tree with a bark as white as cornelian. & I looked at bark most closely & attentively & entirely free of Cupriana from magnifies of the bark alone. I do not say that cornelian & the Sierra plant are

not the same species, but of the same collecting basis for nothing. — & of leaves too — for many the Sierra plants have the glaucous hue of cineraria.

As to Jeffrey & Pendleure, I cannot help your Grace's curse make nothing out of autopsy! — The other cedar touch for nothing. & as to as to flowers. — I am completely looking out for flowers in the new plants — but the no upper yet.

We have two N. Mexicanas, one as you say at Chandler in bright green form of ~~contorta~~ cinerata. (the bark of ~~contorta~~ cinerata is the most characteristic of all the pines; (it is rippled & silky — very lovely) — The other apparently a most vigorous ~~tuberculata~~ muricata.

As to Pinus pungens, I agree it is not always innocent; the Colorado pet. — I take Gray & Chandler always know at sight their character — the lanceolata at sun — & surely enough I was put out, by the fresh buds on say long leaves that ~~that~~ were not so stiff as pungens is with us, but more like those of pungens trees.

both entrepreneurs planted grubbed
primary * Gray & Thurber
that then was a popular
for Prairies in Engelmann-
both I was very ignorant respecting
when I began & had no idea
that there was any difficulty
about the Nat. Prairies! —
I am heartily glad that
you are turning again to Botany
I do believe that the study of
nature is the best safeguard
against despondency that would
otherwise overtake us — but you
have your dear little to love — &
that is an inexhaustible comfort —
I should much like to see him
again, we were all so much
pleased with him — & prepossessed
in favour of his sweet &
intelligence. I am sick my

busy with Sabbatical, I have just completed the order. Bunge's work is admirable, so accurate & the descriptions so well "put out." I think at once proceed to Polygonaceae. Bentham & I even looking at Leitneria & they & we have agreed to make a Nat Ord of it.—

With kind regards to you & Mrs Engelmann

Most truly yrs

J. D. Hooker

Letter to Hooker, May 2d 1879

--- I have a few weeks ago sent you some glaucous branches of the ~~Rocky Mounts.~~ Sierra Abies concolor, which, I thought, could reconcile you to the idea of "specific identity" of this form (Louiana) with the Rocky Mountain concolor. Have you rec'd my Memoir. In England you have cultivate only young trees of this plant with longer, thinner, more grooved leaves and with fewer stomata on upper surface. Only the leaves of older trees especially of flowerbearing branches are shorter, broader, convex above and with more stomata, I have all along insisted on the difference of all firs the foliage of young trees and lower sterile branches, and of those of old trees and especially their (upper) flowering branches. I will add that I had separated in my herbarium numerous specimens, mostly obtd: European Bot. Gardens and nurseries, some from California; they had puzzled me a good deal and were finally separated from the original concolor and from some Sierra forms just on account of these leafcharacters. But at last the conclusion forced itself on me that they are most probably a juvenile

2.

state, as I have never seen fertile branches with such leaves.

Now, as to the bark. You have studied both trees in loco and therefore must know more about it than I do. What I will give you my reasons. Bolander many years ago in describing the firs of the Sierras (and reading specimens) designated one (your Louisiana) as the white fir (vulgo so called) and the other (our magnifica) as the red fir. And, more than that, I have here before me wood and bark specimen from Lemmon (same trees from which the Centennial specimens were cut). A young Louisiana, as I will call it for the present, has whitish bark; an old and very thick one has a bark 2 or 2½ inches thick, much cracked, ashy gray outside, darker, perhaps pale reddish brown or cinnamon within. The young tree of magnifica is smooth, dull or dirty reddish; the old bark is 3 inches thick, dusky, dark outside, bright red brown inside. Lemmon in a Sketch on Cal. Conifers calls the bark of the former also "ashy gray"

Parry tells me, he never thought the Utah and California trees could be the same; the former round-topped, the other a beautiful

pyramid etc — but in the glens at the foot of Pikes Peak and near Manitou I have seen the most beautiful specimens of True concolor.

Don't the climate of the Sierra make all this difference? as it does in Pin. ponderosa and contorta? Geographical varieties!

I will not speak of the unimportant characters of the size of cone a few more cotyledons or the more rounded bract, which Mr Lyne urges; but please compare Parlatore in DC. who describes the original Hartwegian Concolor (from my herbarium) with obtuse or rounded bracts, without mucro; and thus they appear in that specimen.

Pinus Murrayana was founded on Jeffrey's 740 of which number Kew has a long leaved and the Edinb. Herb a shorter leaved specimen; both from Mt Shasta. In the next year Jeffrey collected what was considered the same, and it was distributed under the same number at Walker's Pass, with still shorter leaves. All these 3 original Murrayana come from high mountain regions, where no muricata grows, which is said to be a seaside tree, or at least only near the sea shore. Muricata is a most

4.

variable tree, always within reach of seawords, it is said, and never on higher Mountains. I possess cones with very long spurs, almost like miniature Coulteri, and others with not as strong prickles as purgens or even rigida. This latter form occurs near Meadows in contact with Oblanderi. Hence probably the confusion of seed dealers and consequently nurserymen. Oblanderi, I repeat, is = Douglas' original coast contorta from Mouth of Columbia; the narrowleaved, gnarled (by the seawinds?) tree, which in the Mountains is higher, straight and broadleaved. (the coast plants) And I have not seen its bark, which is so characteristic in the Mountain form — and perfectly identical with that of the Colorado tree. Douglas' true coast contorta grows as far north as Sitka, but from the north I also get forms intermediate between the narrow and broad leaved form.

It may be, that Pinus purgens is not always pungent as you say, but most observers describe it so from Lamb, the original discoverer, to this day, and my specimens also prove it. But it is the gray, cracked bark, which

which I have often studied, and of which I have specimens, distinguishes it from Sitchensis and Engelmanni. Of the former, Sitchensis, I have seen and noted large wood-specs in the Centennial 1, a small tree 1½ feet diam 63 years old; bark a little more than 2 lines thick. 2, an old tree 9 feet base 16 feet diameter cut 98 feet from ground 5¾ feet diameter 226 rings, bark 3 lines thick. In both specimens the bark is cinnamon brown, separating in conchoidal flakes.

Now as to Cotyledons. It is much more satisfactory to study them in a nursery, where you can compare thousands, than to prick open a few seed, — which I had to do; but seeds from Oregon and from California both gave me 4 Cotyledons. I know well enough, however, that their number is variable, within limits. But studying the growing Cotyledons since a number of years whenever opportunity offered, I have learned to appreciate another character, and I am truly thankful to Mr Lyons for his specimens for they were the

first Sitchensis seedlings I was able to examine.

The Cotyledons of Abies are triangular-flat (section) or flat with a more or less prominent Keel on the upper side, always entire. – Leaves stomatose on the under side, or always stomatose always on upper side more on the under than upper side.

The Cotyledons of Picea are triangular-high (section) usually narrower than high, with a very prominent Keel; the Keel is entire in some, spinulose denticulate in others. – The first leaves of young plants are entire or spinulose on upper and lower Keels, always laterally compressed. Leaves of Picea always with more stomata on upper than lower side

Now, how are the young leaves of Sitchensis seedling? I suspect already stomatose above. The Cotyledons are about as high as broad, sometimes even flat and are thus distinguished from all our other Piceas, they are not serrulate which pungens Cotyledons are.

I do not repeat what I said before about the narrow oblong wing of the small seed of Sitchensis, in the nearly obovate wing of the large seed of pungens.

But I have a new character for Sitchensis, in

the large ~~scale~~ bract of Sitchensis (1/3 – 1/2 length of scale) and the very minute bract of pungens. – Borgard calls the bract of Sitchensis 1/3 the length of scale; it is often 1/2 (see Carlcher p. 123) It is the only species of Picea.

As to the name, I have long ago conferred with Gray, who is very careful in these things, and he approved the change as well as the retention of the name of Pin. tuberculata, though now by common consent it indicates something very different from what Don meant, when he thus designated a 100 foot tree from Monterey – evidently a form of insignis.

P. Mariana, Engelmanni and Sitchensis with entire cotyledons – I grow leaves, albo x pungens with spreading keeled ones. – – –

I lay no great stress on presence or absence of stomata, but usually there are few or none on the lower side of Sitchensis – – –

Lyall's specimens from all along the line must be carefully studied and (his accounting) can have no weight, because neither he nor any body else distinguished at that time

~~Lit~~ the Rocky coast from the Mountain spruce.

It is quite probable that pungens may grow all along the Mountains eastwardly and meet Lithodensis perhaps on the western slope. This latter is always considered a seaside or at least lowland tree; "Helena at an elevation over 500 feet" (Oregon Exhibition: Mitchell)

— The San Bernardino Douglasii is rather a Douglasii var macrocarpa Torr., Vasey's species of macrocarpa. Torrey is probably right.

Rec May 21
Ans — 25

May 8/79.

Dear Dr Engelmann

I am very much obliged for the Cactus & Lemaire Album. When I was in St Louis he told me that he had two forms of the genus, one with red & the other with yellow

Bad scales.-
Neither Sequoia nor I can
make anything out-
Concolor of Lemmon's
specimen: It is the
matter must rest till
some skilled man like
yourself goes to the Sierras
Neither Greg nor I could
pretend to any intimate

to that with

Kennedy & Vult. What we
can say & swear to is,
that we saw no pale
or white barked trees
in the Sierras - or any so
white a barked branch
as the Colorado cercocarpus.
I do not think we can
have overlooked such.
anywhere on our route
from Yosemite to Shasta.
I send leaves & seeds
from the Yuba River.

Can you name the enclosed
2 seeds, wh. we have as Pinus
of P. maurocarpa?

We have 2 forms of P.
Sabiniana with one with
dense foliage & pendent leaves,
the other the most skeleton
of all Pines with few large &
spreading leaves.

I shall soon send you a
photography of a cone. Which
puzzles me.

Ever with kind regards to you,
Dear Engelmann

J D Hooker

Rec'd Davenport Aug 12th
Ans Aug — 19

July 26/79

My dear Dr Engelmann

I have yours of June 20th & having never "any thing better to do" than to read your letters I have acted up to my pleasure & duty in so doing.

I am indeed disappointed to find that you are not coming to England, with your Son & daughter. I hope that a visit to the Gardens with you, & to have met your son in the way of much that he would have liked to see.

There has not been a trace of flowers on any of our P. Jeffreyi or Ponderosa (alias Benthamiana) but a good deal of O & I am drying for you some of the O of the Jeffreyi, which I think you wished for. It is no way that I see differs from O. Ponderosa except in

looking decamperatae, & what is the character of all the specimens we have of that tree - they look like thin half starved pinderosas with a blue foliage.

I thank you very much for the seeds of the big coned pine - they are most useful & show that some of yours are wrong named

I send a photograph of a cone of so called ~~supposed~~ Coulteri from the Knoxville Nurseries. which is much smaller than the typical plants of that name of which we have cones, & with far more numerous scales the photograph is by mac the natural size. I do not want it returned.

Also I send a fresh cone of Bouquet's Rocky Mt Coulteri which on

not like those from further West which we have.

Province of Canada has gone for Lincoln the County N. of 56 – 20 the B. M. just north of the Boundary I have asked him to look out sharp for the Cuscuta. I see that Cone has published a list of Dakota & Montana plants. & that "A Englemann" figures amongst them. but he makes no mention of prenderous or of any species but balsamea!

What you say of California being so much in lance for Darwinian theory, is curious: no doubt it is so as compared with Eastern N. Am. where species appear to be remarkably constant; but I should think that Europe would match California which is enough for many of the worst genera as Salix, Rubus, Rosa, Carex, Poa

I shall open with you (judging from cultivated specimens) i Thinking P. murrayana is variety of Centaria. & I should have thought

that Balfourianus & amabilis were such very varieties; certainly in nature they can only the distinction half so good as between Sitchensis, menziesii, & lasiocarpa.

I have not known that the bud scales would separate P. alba & nigra, & am delighted to hear it, for I am hereby prejudiced by these two gentlemen & the garden here when not in fruit. Gray says (Manual) of a dark form of nigra that it is "understrigosus hairs from alba except by the fruit" — young nigra fruit fresh with us, but not alba.

Yes the Pseudotsuga grandis is our amabilis.

I have not had an opportunity of collecting old specimens of the cultivated conifers Lawrance &c. The stock house from which you sent is very curious. I shall go to Lainburgh this autumn & visit the old specimens there. From what I hear many have lost their history, which is a very great pity. I will let you know the results.

Gardeners Chron. 4 July 16

Gentlemen, as you know working with the genus of Conifers for Gen. Plantarum & I am much interested in the work. We were very much astonished at the Dacrydiums & including it in Podocarpus, but have appreciated very much the complimentary & the curious Podocarpus distribution! The Chilean forms seem to connect it with Podocarpus & some species of Phyllocladus. We are quite puzzled how to divide old Pinus generically & shall have to search for habit & fructiferous characters.

Thanks for your note on Vitis. As my curiosity, I wonder whether your distinction character between Vitis & Ampelopsis would hold in the Old World.

I have been labelling specimens in America below in the Arboretum — we have a respectable collection. Can you name enclosed off-hand? Some G. nigra?

of them resembling it: the Nelumbium
have acicular points & the lower.
It is for a tree from 30 years old.

Both kind regards to you from
Your sincerely

J. G. Schaller

Rec Dec 18
Ans Jan 14 1880

Dec 4/79.

My dear Engelmann

I am so glad that you have given me something to do — however small, for then I am roused to thank you very sincerely for those good instructive letters — the description of California Coniferæ & the "clavis" of Pinus —

I am very pleased with both the last — though still grieved of the white bark cones of the Sierras, — & at finding we young trees there at all like our young seedlings ~~cones~~ cones. The only thing remains I have to

Received Pinus Sabiniana for many at various times

make it on the reported
frequency of nebulis in the
Sierras - Gray & I misjudged it..?
for though we get cuneus with
nebulis treated I did not
say bracts with the help of our
Garden notes. - Bracteoles
we get, & what is here called
Lanceaus, both of which should
have included bracts. - so I
can only suppose that I did not
recognize the nebulis potential &
the bracts that produce the
essential bracts - I must look
again at the specimens we
collected.

I wonder if you had time when
Cambridge to arrange or name Gray's
fine collection of Lichens — How I wish
you could now be our Surgeon
collector. occupying treble the
space you saw it filling.. & most
I think correctly named.

I am delighted to see the clearing
& the abandonment of the old
1, 2, 3. 5 divisions which however
useful for Gardeners & for many
purposes is utterly unscientific
I think your arrangement is as
nearly faultless as maybe, that is
in so far as I know the Flora.
There are perhaps rather too many
sections, but a reduction of them
if necessary will not alter the
grouping or in any way dislocate the

The Series.

We have had a great amount of work this winter in the transposing of the vegetable products of the Indian Museum to Kew, which will entail many months labor. I have been occupying every spare minute with the "Genera Plantarum" & "Flora of British India"

Your counsel in the matter of the Conifers has been invaluable to us. & I hope the order will appear in a better condition than any previous attempt?

You will be interested to hear of the discovery of the true form of Cedar of Lebanon on the Mts. of Cyprus – it is near the Algerian form, some cone & very much whiter silvery leaves – with kind regards to your son

believe me always yours

J D Hooker.

Rec Feb 10

New York May 6th 1880.

My dear Dr Engelmann

Allow me to introduce to you my particular friend Mr J. Booth of the celebrated Flora Hillbrook Nurseries near Hornsburgh, who - if his letter have done my 30. years continuously made most magnificent contributions of Trees & Shrubs to the Arboretum

of Kew. Their names are
not strange to you — I know.
& the Kew Reports have told
you of their noble efforts.
Mr Booth is devoting himself
to the introduction of American
lines into Assam, & at the
same time collecting scientific
information relating to your
forests & to the great Rubber
for the Government. [illegible] of

correspondence with you. I
please accept my personal
introduction & believe me
to remain

Yours truly
J. D. Hooker.

Dr Engelmann
St Louis
Missouri -
U.S.

Rec April 13

March 20/80

My dear Engelmann

I hope you received the Cone & seeds of Pinus Canariensis, which I despatched immediately after receiving your card of the 6th of the seeds sent in a letter:— & which they seemed your purpose.

I have been driven off Conifers since writing last — my days in the Garden being devoted to "planting out" the fine collection we have of Ostrya, Carpinus, Castanea, Fagus & Corylus, in avenues, each genus by itself — an operation

requiring a great deal of personal
supervision both with respect to
the direction of the avenues, re-
moval of dead trees, the soil (which
varies exceedingly) & the classification,
which I "generally" adhere to. This
completes the arrangement of the
Arboretum, over which I have been
occupied nearly 12 years & more, &
which extends over nearly 300 acres
of ground. –

I see amongst the Pines enumerated
in the map classified ~~that~~ which you were
so good as to send me, that you
put P. pyrenaica with halepensis
I find we have 2 plants so called
on the P. Austriaca, which I can hardly

distinguish from heldreichii, the latter is a Larix with red branches. I don't say that you know of this, it struck me, but I find that Parlatore notices it.

Do you keep Engelmannii distinct from pinderoi? if so can you send me some of it? also of arizonica, a species I do not know.

x. Greggii only = single sp.

You distinguish Pezyma from Mandschurica, it seems curious that they should not belong to the same genus.

Can you distinguish Larices from Austria? & Hemlocks from douglasii?

P. Greggii I do not know even f.

I see American botanists put serotina under rigida, but which are our observers of serotina (as well Tsuga), are frightfully mistaken & the point, rigida is unknown.

I have pointed out that it is also this species seemed to be a good distinguishing character of P. Jeffreyi, which

in the glaucous young shoots; these in pendence being shiny & green. I can distinguish all our species easily by their character when the shoots are young.— The T. gl. seems quite undistinguishable.

The character that distinguishes P. Balfourii from aciculata is a white granular exudation, like grains of white sand here & there (very distinct) on the leaves of the former.

I shall be very curious to know what Siberian Picea is: the leaves you sent are unlike any thing else.

I will try for Picea omorica, & if I get cones will send you some.

Have you cones of Picea or Abies Fortunei? (Ketelaerie)?— if not I can send you one. The leaves are of Abies. The cones have the persistent scales of Picea, but are crab like Abies!! I have

unfortunately no T.P.

There are 3 forms of cone of P. contorta Bolanderi: a fourth

1. A small broad cone with small basal scales (like the stems) & slightly reflexed prickles, brain b
2. Setts with longer straight prickles
3. A much larger cone with bosp-like basal scales on upper side (much as in P. insignis) & ascending prickles.

Nos 1 & 2 seem more western & latterly 3 is the common Californian form.

We have one tree of 1. quite unlike any other, & of a most brilliant green.

Is it P. mitis that has a rough-barked & further out-hairy sprays all along the trunk? We have 2 trees of it, & neither fruits.

(I find a num. Kew Gardens sets 1869 P. mitis with adventitious buds on trunk

Sprouts mentioned pag 163 individually

W. J. Hooker

1 = Pinus contorta

2 = P. sabiana ?

Merkusii 12 to place now 26

I send a branch of this with cones of another N. American & branch & cones together with the Pinus attenuata / correct name.

Bot. Lepe

Rec'd May 12th
Ans June 10

April 27/80

My dear Engelmann

I have just received your beautiful & most interesting work on Pinus. It will take many days! but sure - it is such a capital piece of work

The fine capsules of the Catalpa & the green ones

Attached only to night

They were delivered: the P. O. on your side of the water are being over-worked

I received in Newport a letter from the P.O. asking me if I would buy the 4 cents note, but not saying what the packet was or from whom it came — I wrote saying yes — send it on. & I am glad I did so.

I am also glad that the Paris Grandmère came arrived in time.

Quite forgot to mention I wrote with the two Paris, Zenta. But I supposed was

(as I am sure I did)
contortus, but it grows quite
amidst our others in my Hot
most lovely green. The other
I am glad to hear is probably
insps, for I could make nothing
else of it.

I am so glad that you are
pleased with the Chrysos of Ser.
plant. Bentham worked
tremendously hard at them, &
I dared my little Sapiebla as
helper in certain cases.

Yes the winter, cold & last
summer were been down as ill.
P. integrifolius, many often killed, dieta
tuberculata here & there &
muricata. Bruntie killed,
Pinea much hurt. Excepts

Bartlett's Abies is bunkum & so Picea is touchwood, except Abies Webbiana which we cannot grow at all.

As to the age of Pines I should mean Mungpu that P. flexilis attains a tremendous age. The wood is like iron, & the rings are countable.

The variability of the ducts P. excelsa longifolia is a staggerer.

I must look to Griffith's 4993, the idea of its being Larices is monstrous – delta of Griffith's 4992 being Maximowiczianae, the wise doubt my Cattellii, (lately discovered) which has a peduncle some like, halfpenny

Cattellii

We want good cones & of Arizonica Chihuahuana, glabra & Wrightii.

Ever sincerely yours
D Hooker

Mr Syme is now head of the Bot. Garden Jamaica. He writes that Abies Fortunei is a good Conifer (= ~~Kitelteria~~ Keteleria) - We had such specimens enough to decay thing with. He calls the classification of Conifers in Gen. Plant. "immediate starting" He is writing to Mr Chancey Rees into Cupressus, saying that the annual moluretum of the seeds of Chancey. is its best character. There is much to be said for leaving Thuya as it was & putting the two C's only Allinisporus together ~~into~~ as Cupressus.

Rec'd Oct 20th
Ans Jan 15 1884

June
Jan 22/83.

Dear Dr Engelmann

We have been expecting
expecting your
his capsules announced: your kind
letter of April 30th & more
delighting of it, I write to say
that it has been announced!

You request of the Missionaries
microscopes
fruit arrived too late. but I
write to it each year for
you. The plants forms every
winter the red letter cures
figured: Bot. Mag - with
succulent scales, but there have
never yielded us any seed - they
become
have written late & turn brown &
dry, as in the specimen I sent-

by book yesterday. If you would like it I will put both D & G into shrubs for you next winter.

I am glad to hear that you took to your interesting Conifers. Our new Pinetum is opening fine specimens & I long to show it to you – I do hope that you will come to England this year & yr Aunt & Uncle respect. I think be at home, at or near Kew the Summer

I should much like to show you our Pines – the Thunbergii

look & enjoy it as the
most interesting.

I have seen a good deal lately
of Ab. Cuneata — it is I think
a well marked form, whether
or no to be added to Lasiocarpa

I should also like you to see
the intermediates between them — ?
3 Cedars. & many other things.

Do you know any thing of a
Pinus from Honduras, we have
just received one like Teocote.

With best regards to
Sa
Ever yours
[illegible]